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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,071	01/14/2004	Masaru Odajima	TOW-059	5108

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28 STATE STREET
BOSTON, MA 02109

EXAMINER

ABOAGYE, MICHAEL

ART UNIT PAPER NUMBER

1725

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/758,071

Applicant(s)

ODAJIMA ET AL.

Examiner

Michael Aboagye

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/29/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 6-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 04/14/2004, 07/13/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicants' election of Group I (claims 1-5) in the reply filed on July 29, 2005 is acknowledged. Because the applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

2. Figure 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Litwinski et al. (US Patent no. 6257479).

Litwinski et al. discloses a friction stir welding method of joining cylindrical portions that are abutted against each other end to end by moving a rotating probe relatively along said abutment portion while pressing said probe against one surface of said abutment portion at which an end of a first cylindrical member and an end of a second cylindrical member are butted together, said friction stir welding method comprising the steps of externally fitting said first and second cylindrical members on a back-up tool so that another surface of said abutment portion is in close contact with an outer circumferential surface of said back-up tool; performing friction stir welding on said one surface of said abutment portion while retaining said other surface of said abutment portion with said back-up tool; and separating said back-up tool from said other surface of said abutment portion after said friction stir welding(column1, line 10 – column 2, line 67, and column 5, lines 3- 48). Note that the “backing jig” disclosed by the applicants’ is considered as a back-up tool, note also that the Litwinski et al. back-up tool is operable to retract to enable separation of the back-up tool from the surface of the abutment portion after the friction stir welding.

Regarding claim 4, Litwinski et al shows a stir welding method, wherein said first and second cylindrical members are welded by said friction stir welding along said abutment portion while a pressing force is applied in a direction substantially perpendicular to a direction of insertion of the welding tool (T). Note that in (Figures 2, 5

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and 7) the welding tool T presses on the abutment portion in a direction perpendicular to its direction of insertion on the abutment portions.

Regarding claim 5, Litwinski et al., note that the outer circumferential surface of said back-up tool has a completely circular shape, and circumferences of said ends of said first and second cylindrical members, which are in close contact with said outer circumferential surface, have an identical length (column 2, lines 43- 67, and figure 4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Litwinski et al.

Litwinski et al discloses all the elements of claim 1 and further discloses a back-up tool which is rigid, made of material harder and melts at a higher temperature than the work piece (cylindrical members). Also cylindrical members undergo thermal growth and expansion under friction stir welding (column 3, line 30 – column 4, line 29), but does not specifically show that the first and the second cylindrical members relatively expand as compared to the back-up tool.

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to have known that the back-up tool made from a material harder and melts at a higher temperature than the cylindrical members may under go relatively less expansion under the heat of friction stir welding as compared to the cylindrical members to enable the back-up tool to be separated from the first and second cylindrical members after the said friction stir welding.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shitogetoshi (JP 2001191183), (see complete translation of the Japanese document) in view of Whitehouse (US Patent no. 6247634)

Shitogetoshi discloses a method of friction stir joining abutment portion by moving a rotating probe relatively along said abutment portion while pressing said probe against one surface of said abutment portion at which an end of a first cylindrical member and an end of a second cylindrical member are butted together, said friction stir welding method comprising the steps of: externally fitting said first and second cylindrical members on a backing core so that another surface of said abutment portion is in close contact with an outer circumferential surface of said backing core; performing friction stir welding on said one surface of said abutment portion while retaining said other surface of said abutment portion with said backing core (Japanese Translation, Detailed Description, [0001] – [0012], and Prior Art [0003] and [0004] and Drawing 3)

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Shitogetoshi discloses all the elements of claim 1 but does not specifically disclose separating said backing core from said other surface of said abutment portion after said friction stir welding.

However Whitehouse teaches a method of stir welding cylindrical edges by providing an anvil ring inside the abutment portion of the tank to be welded. Note that the anvil ring is being considered as a backing jig for supporting the abutment portion to be welded. The anvil ring is constructed so that it can be disassembled within the welded tank so that it can be separated from the abutment portions after the friction stir welding (Whitehouse, column 1, line 12 – column 2, line 39).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to have modified the backing core disclosed by Shitogetoshi with an anvil ring in view of the teachings of Whitehouse, since the anvil ring can be disassembled within the cylindrical members and removed in pieces to be separated from the abutment portion after friction stir welding (Whitehouse, column 1, line 12 – column 2, line 39).

Conclusion


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Michael Aboagye
Assistant Examiner
Art Unit 1725
8/10/2005

KEVIN KERNS *Kevin Kerns 8/10/05*
PRIMARY EXAMINER